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ABSTRACT

This paper describes the creation of a computer competency requirement at Mary Washington College (Virginia). The goal of the The goal of the requirement is to ensure that students acquire meaningful skills with technology, and that faculty increase their technological proficiency. The plan was developed based on a review of literature on other schools' approaches to teaching computer literacy. Phase One of the plan develops procedures for providing students with basic skills training in technology, which assure a minimal level of computer competency upon completion of the training. Phase One emphasizes five fundamental computing skills: creating a word processing document; creating a spreadsheet that involves calculations; accessing on-line information from the World Wide Web; using the campus computer network to send and receive information; and electronically locating topically relevant information within the campus library. In Phase Two, faculty develop a procedure and integrate technology into the curriculum. As faculty integrate technology more extensively across a diversity of academic areas, students will gain various experiences using technology. Supplementary skills taught in technology intensive courses may include: desktop publishing; programming; databases; creating web-based resources; translating file formats; graphics and drawing; and using and creating digital and analog video and sound. (SWC)

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Creating a Computer Competency Requirement for Mary Washington College Students

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PREFACE

At the time this proposal was submitted, it was expected that funding would be provided to establish a campus-wide computer competency requirement through Mary Washington College's Funds for Excellence program. Only in the last few weeks did we learn that this funding would not be provided for our project. Based on that news, our original ideas and projected activities have changed rather significantly. Although initially disheartening, the result has been a streamlined and more tightly integrated plan for achieving computer competency on our campus. Our presentation will address the barriers encountered and the challenges posed by establishing a computer competency requirement and will provide a snapshot of our current progress and activities.

ABSTRACT

Mary Washington College is currently completing a $9.6 million technology restructuring initiative that promises to provide a state-of-the-art ATM network and upgraded computer capabilities campus-wide. As the project nears its finish, attention is now turning even more intensively toward how we plan to utilize the network and equipment to achieve our educational goals and objectives. Consequently, we are creating a plan to ensure that our graduating students possess computer skills. Within this paper we address a current review of the literature expressing how other schools approach this issue with a specific emphasis on our MWC efforts.

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INTRODUCTION

In the fall of 1995, a few of us at Mary Washington College began investigating the efficacy and practicability of establishing a campus-wide computer competency requirement for all students at the College. An initial step was to investigate the methods and procedures being used at comparable academic institutions for achieving the same goals. A review of literature and a web-based inquiry identified numerous schools that have computer competency requirements. Summarizing this information results in essentially two methods of implementing the competency requirement. One method is to create a discrete and separate requirement that exists outside of the academic program. The second approach involves integrating the use of technology into the courses that students take. While these two approaches seem fundamentally simple and rather different, adopting either approach requires resources of personnel, equipment, expertise, and time that many colleges lack. Selectively adopting aspects of both approaches, borrowing from similar programs that pre-exist on the MWC campus, and developing a high quality computer competency requirement that efficiently utilizes minimal resources is the focus of this paper/presentation and current efforts on our campus.

REVIEW OF LITERATURE

There are simply too many types of computer skills to teach all of them to everyone. As schools began to address the need for fundamental skills with computers many definitions of literacy developed. In the early 1980's, programming skills were often included among the types of experiences that resulted in literacy. More recently, research skills using the Internet and networked resources have begun to replace these early requirements as literacy evolves concomitantly with the newer technologies. Defining computer literacy has been described as hitting a moving target due to the rapid changes that occur in the area of instructional technology. In fact, some argue over semantics as they claim that one problem of relying on the term computer literacy is that it implies the existence of a universal set of skills which every student needs. The argument is that this set of skills doesn't truly exist because of the diversity of computer applications and the rapidity of technological change. In spite of these arguments over semantics, generally speaking, most people tend to use the terms "literacy" and "competency" interchangeably in regard to computer skills. For this paper, we have chosen to use the term competency to refer to the minimal level of skill with computers that we plan to have our students acquire.

The need for technological skills is well recognized and certainly not unique to Mary Washington College. In 1994, the American Association of State Colleges and Universities (AASCU) conducted a survey of its 250 member institutions in regard to several technological issues. One such issue was computer competency requirements. They found that although few colleges have computer experience entrance requirements most have explicit requirements and computer competency goals upon graduation (AASCU, 1995). More than half (58 percent) of the institutions surveyed stated that their students would be computer competent by graduation as a result of completing coursework within specific majors that require the use of computers. At 22 percent of the institutions, a discreet requirement exists for computer competency prior to graduation. Specific computer competency requirements are being considered at more than two-thirds of the 230 responding institutions. Of those already requiring such a competency, it tends to cover computer skills in word-processing, spreadsheets, and database management principles and applications. About one-third of the schools requiring this competency reported that students take a stand-alone course or a series of lessons

integrated within one of their core courses required to fulfill general education requirements. At the other two-thirds, schools reported specific departments holding such computer competency requirements (business, science, teacher education, art, library studies, journalism, nursing and criminal justice). Assessment of computer competency was reported to generally involve course completion, faculty evaluation, self-paced learning modules, completion of exit interviews by computer, and transcript reviews as methods of certifying that students had completed the requirement.

According to a 1996 survey by the American Council on Education (Knopp, 1996), more than half of all college students and faculty members have some sort of recurring instructional experience with information technologies. While some colleges and universities have required that students use and become knowledgeable of instructional technologies since 1982 (see Brown, 1983), many are only now acquiring the necessary resources and expertise for such a requirement. Various approaches have been taken by many schools. By examining these programs, latecomers such as Mary Washington can reap the benefits of these initial efforts.

At Ursuline College, in Cleveland, Ohio, incoming students (freshpersons and transfer students) take an Introductory seminar. Although the seminar combines several subjects, each student undergoes a 90-minute session in the computer lab. This introduction provides the students with fundamental skills using Windows and WordPerfect. Upon completion of this session, students have three choices. One option is to take a computer class where they learn to use various software applications (e.g., Excel, Access, PowerPoint, WordPerfect). A second option is to test-out of the computer class by doing a project and passing a test. If passed, the student gains the same credit as those taking the course. A third option is to attend a 90-minute session in the computer lab with in-depth instruction provided. Computer Services tracks each student to ensure that the computer competency is completed. The faculty at Ursuline College have set the goal of integrating technology into every major by the Fall of 1997. We infer that this indicates a transition from a separate requirement for computer competency to an integrated approach where core courses are identified as using technology.

At Texas Tech University, teacher education students have been required to take a computer competency course as part of their certification requirements since 1985 (Von Holzen, Lee, & Price, 1990). A five-year longitudinal study based on surveys of these students taking the computer competency course revealed increases in positive attitudes toward computers and a corresponding increase in perceptions of their own computer-related skills. We have no evidence indicating a transition at Texas Tech from separate to integrated requirements.

At West Virginia University, students in the Teacher Education program have been required to complete a Computer Awareness Module as a means of establishing their proficiency with computers since 1984. Currently, WVU is revising this requirement so that all core courses in the teacher education program will integrate technology (15 courses). As they implement the new teacher education requirements in the fall of 1997, students will no longer be required to complete a separate Computer Awareness Module.

Hamline University, in St. Paul, Minnesota, is recognized for creating the first undergraduate computer literacy requirement in the United States in 1982 (see URL 1). This requirement was

initially fulfilled through proficiency testing, computer science courses, or self-paced computer-assisted short courses. Since that time, they have revised their computer competency requirement so that it is currently an integrated approach in which traditional courses utilize technology. They no longer require students to complete additional requirements to prove their proficiency with computers.

The American University, in Washington DC, currently integrates computing into all their core courses (Ferren, 1993). These courses were revised to integrate technology as part of general education reform efforts which encompass these computer requirements.

SUMMARY

There are many examples of colleges and universities establishing computer competency requirements. The clear trend seems to be that since 1982 a progression has occurred from separate courses and training to an integrated approach in which technology is incorporated in core courses. While most institutions seem to have initially begun with a separate requirement and then later evolved to an integrated requirement, only partial proof of this has been found.

At Mary Washington, our goal is twofold. We want to ensure that students acquire meaningful skills with technology and we want our faculty to concomitantly increase their technological proficiency. Within these two goals, one objective is to provide a diversity of technology-based experiences so that our liberal arts college doesn't produce students from a cookie-cutter-type mold. Conversely, every student should attain a minimum level of computer competency. Realizing that many other technologies exist in addition to computers, we maintain that a major subset of technological proficiency is a competency with computers. While a definition of computer competency might remain dynamic for quite sometime, we will identify those fundamental skills that we feel are general enough to benefit students of diverse academic backgrounds based on current technologies.

Our project has evolved into a two-phase approach. The two phases are not sequential and are intended to occur simultaneously. In Phase One we plan to develop procedures for providing students basic skills training with technology. The obvious benefits of this are that instructors will not be held solely responsible for providing these fundamental skills and that a minimal level of common computer competency can be assured upon completion of this training. In Phase Two, faculty will integrate technology into the curriculum and a procedure for this process is to be developed. As faculty more extensively integrate technology across a diversity of academic areas, students will graduate with various experiences using technology in addition to the common basic skills. Both approaches offer benefits that we hope to realize.

PHASE ONE SEPARATE COMPUTER TRAINING

Some of the major objectives of Phase One are to:

- Establish specific criteria for evaluating levels of computer competence for students
- Provide a diversity of alternative methods for completing the competency requirement

Specific Criteria for Competency

We have defined the computer competency requirement as targeting five primary aspects of computing. These five components of computing are broad objectives reflecting fundamental skills that we feel all students should possess. They are the ability to:

- create a word-processed document
- create a spreadsheet that involves calculations
- access on-line information from the World-Wide Web
- use the campus computer network to send and receive information
- electronically locate topically relevant information within the campus library

It is expected that additional benefits will occur from acquiring these fundamental skills. Research shows that prior to engaging in successful learning with computers that a reduction in computer anxiety is required and that as students gain computer skills they progress from self-based to other-based attitudinal concerns. These variables will be examined as students engage in the computer competency training. Additionally, many subskills remain to be identified as these five areas of computing are formed into explicit evaluative requirements. For example, students will need to format a disk, upload and download files, login to a computer, and complete other prerequisite skills to successfully complete the five requirements.

Providing Multiple Options for Completion

Establishing an effective computer competency program for the College will require the availability of multiple avenues for fulfilling the requirement. This is primarily because of the diversity of computer experience levels and the various learning style preferences possessed by the students. Some may be ready to test out of the requirement immediately while others may desire (and need) preliminary training before attempting to pass the requirement. Some students may prefer to pick up a printed packet of materials to study before attempting to pass the requirement while still others may benefit more from an on-line collection of tutorial-type materials. All of these options will ultimately be available for MWC students. Initially, students' options will be limited to training, printed training materials, and hands-on proficiency tests for exemption to the requirement. Training sessions will be offered several times each semester and students will need to register to attend. Some instructors may begin to require completion of this training as a prerequisite to enrolling in their courses.

PHASE TWO INTEGRATION

Some of the major objectives of Phase Two are to:

- Establish goals and objectives for Technology Intensive courses
- Define the criteria that will be required for these courses

Our second phase aims to develop an integration of technology and pre-existing course curricula. Initial steps will be to identify the criteria and process by which courses become designated as Technology Intensive. Some important considerations to note are that: (a) this approach broadens computer competency to include other technologies (video cameras, scanners, fax machines), (b) a

cadre of student tutors will provide fundamental skills training to augment in-class uses of technology; and (c) approval of the faculty will be necessary to incorporate yet another intensive requirement.

In the fall of 1982, Mary Washington College implemented a Writing Intensive Requirement for all degree-seeking students. Currently there are 120 course sections offered that fulfill the Writing Intensive requirements. Initially, monetary support was provided for faculty as incentives to adapt their course syllabi to the new WI requirements. In the fall of 1997, MWC plans to implement new general education requirements that will include additional across-the-curriculum requirements of Global Awareness, Speaking, Race/Gender, and Environmental Awareness threads. Once approved, students will be required to complete four WI, two GAI, two SI, one R/GI, and one EI course prior to graduation. Naturally, many courses might carry designations of multiple threads as they fulfill more than a single across-the-curriculum requirement. None of these additional themes is exclusive to using technology.

Goals and Objectives of Technology Intensive Courses

While much remains to be done, we have formulated some preliminary goals and objectives. Some of these ideas are that:

- students should progress from simple to complex uses of technology
- students should progress from being consumers to producers of technology-based information
- a logical and progressive plan should exist that results in graduating students having fundamental technological skills
- all students must have access to technology - access must not be inhibitive to the goals of technological competency
- existing coursework that integrates technology must be recognized
- future coursework (proposed courses) should be targeted as potentially inclusive of technology
- the Restructuring Task Force on Instructional Technology should act as the screening committee to evaluate syllabi of potential Technology Intensive courses
- explicit criteria must be developed that will identify Technology Intensive courses
- extracurricular training must be provided to accommodate students needing additional technology-based skills
- technology-based projects that students develop should be included in their portfolios

Technology Intensive Course Criteria

Similarly, we have only done preliminary work on the criteria for determining Technology Intensive courses. Some of these ideas are that Writing Intensive courses might involve having students:

- create a word-processed document
- create a spreadsheet that involves calculations
- access on-line information from the World-Wide Web
- use the campus computer network to send and receive information
- electronically locate topically relevant information within the Simpson Library
- desktop publishing

- authoring/programming
- databases
- creating web-based resources
- translating file formats
- graphics/drawing
- using/creating digital and analog video
- using/creating digital and analog sound

While many questions remain to be answered, we feel that significant progress has already been achieved. Our hope is that colleagues will share and contribute their experiences and procedures during our session or more extensively by contacting us. As we continue to make progress on this project we offer to revisit this issue with our fellow ASCUE members.

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